

ABSTRACT

An adsorbent comprising zeolite exhibiting a moisture adsorption of at least 28 wt.% at 25°C under a partial pressure of water vapor of 5 Torr, and exhibiting a moisture adsorption difference of 15-25 wt.% between a moisture adsorption at 25°C under a partial pressure of water vapor of 5 Torr and a moisture adsorption at 100°C under a partial pressure of water vapor of 15 Torr. This adsorbent is produced by ion-exchanging an exchangeable cation in a zeolite, and then, heat-treating the cation-exchanged zeolite in an air or nitrogen stream, or with steam. The adsorbent exhibits a large moisture adsorption at ordinary temperature under a relatively low partial pressure of water vapor and a small moisture adsorption at a relatively low regeneration temperature, and thus, has an enhanced effective moisture adsorption, and is used for a zeolite-water heat pump system and an open cycle moisture adsorption-desorption system.